

What is claimed:

1. An expandable mandrel for plastic deformation of a tubular from an initial inside diameter to an expanded inside diameter, the expandable mandrel comprising:

a base having an outside diameter smaller than the initial inside diameter; and

a plurality of deformable segments extending from the base wherein each of the plastically deformable segments are deformable to the expanded inside diameter and when deformed to the expanded inside diameter together form an expansion surface having gaps between the deformed segments that are not aligned with a centerline of the tubular.

2. The expandable mandrel of claim 1 wherein the deformable segments each comprise a deformable portion connecting to the base and connected to the expansion surface of the deformable segment.

3. The expandable mandrel of claim 2 wherein the deformable portions are each aligned with the centerline of the tubular.

4. The expandable mandrel of claim 2 wherein the expansion surface of the deformable segments form an essentially conical expansion surface.

5. The expandable mandrel of claim 2 wherein the deformable portions extend outward from the centerline of the expandable mandrel.

6. The expandable mandrel of claim 3 wherein the collar is a cylindrically shaped metal section.

7. The expandable mandrel of claim 1 wherein the gaps are essentially formed by the outward expansion of the deformable segments.

|